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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,325	12/23/2003	Hiroshi Takiguchi	029383.53061US	5591
23911	7590	03/15/2005	EXAMINER	
CROWELL & MORING LLP INTELLECTUAL PROPERTY GROUP P.O. BOX 14300 WASHINGTON, DC 20044-4300			MAI, NGOCLAN THI	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 03/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/743,325

Applicant(s)

TAKIGUCHI ET AL.

Examiner

Ngoclan T. Mai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on preliminary amendment filed 5/27/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 14-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-22 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claim 1-13, drawn to iron based sintered body, classified in class 75, subclass 243.
 - II. Claims 14-22, drawn to method of making, classified in class 419, subclass 11.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by infiltrating a compacted preform of powder material with Cu.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with applicant's attorney Herbert Cantor on March 11, 2005 a provisional election was made without traverse to prosecute the invention of group I, claims 1-13. Affirmation of this election must be made by applicant

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in replying to this Office action. Claims 14-22 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4, 7, 11 and 12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Omiya et al. (5,861,565).

Omiya et al. discloses synchronizing ring formed of an iron sintered alloy, which comprises carbon from 1.2 - 2.0 wt.%, copper of from over 15 wt.% to 25.0 wt.% and

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the balance being iron and impurities. Omiya et al. teaches that the matrix of the sintered body comprises a fine pearlite structure having porosity between 2 to 12 vol.% and in the matrix of which a free Cu phase is precipitated. See col. 2, line 61 to col. 3, line 17. Omiya et al. also teaches that the surface of the iron sintered body is subjected to steam treatment to form surface roughness of from about 20 to 25 microns, col. 4, lines 31-49. Since the iron-sintered body taught by Omiya contains composition and has structure substantially as claimed it would inherently have the claimed average thermal expansion coefficient.

"Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best, 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.' In re Spada, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best, 195 USPQ 430, 433 (CCPA 1977)."

Regarding claim 3: Omiya et al. teaches the surface of the sintered body is treated employing steps in reverse order by subjecting the surface of the iron sintered alloy to steam and subsequently blasting treatment (i.e., shot blasting), col. 3, lines 5-8. However there is no apparent difference between the claimed sintered body and the sintered body taught by Omiya et al. Note that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious

from a product of the prior art the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 227 USPQ964, 966 (Fed. Cir. 1985).

Regarding claims 5-6, since the amount of carbon present in the sintered body taught by Omiya et al. is within the claimed carbon concentration and the volume ratio of the pores relative to the volume of the sintered body is overlapping that of the applicant, the sintered body taught would inherently have free graphite phase dispersed in the matrix and pores that are isolated from or partially connected to each other.

The reference teaches material with constituents whose wt% ranges overlap those recited by the claims; such overlapping range renders applicant's composition prima facie obvious despite difference in non-overlapping areas, see In re Malagari, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974). Furthermore, in view of the overlapping in composition, the composition taught by the prior art would be expected to possess the same properties of applicant's claimed material. See *In re Best*, 195 USPQ 430. To distinguish over prior art, applicant needs to demonstrate (e.g. by comparative test data) that the more narrowly claimed ranges for the alloying constituents are somehow critical and productive of new and unexpected results.

Regarding claim 11 the synchronizer ring formed from the sinter alloy taught has grooves on the inner and outer surface. See figure 1.

Regarding claim 12, since the sintered body contains composition and has structure substantially as claimed, it is expected that the sintered body would possess the claimed thermal expansion coefficient after being processed by the method in the instant claim.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Omiya et al (5,861,565) in view of Takahashi et al (6,139,599).

The difference between the claimed iron based sintered alloy and that of Omiya et al. is that Omiya et al. does not teach the presence of MnS, CaF₂, BN and enstatite for improving machinability of the body.

Takahashi et al. teaches 1-10% by weight of solid lubricant particles such as MnS and CaF₂ having particle size less than 50 microns can be dispersed into the matrix of an iron based sintered alloy to enhance its machinability and abrasion resistance, col. 5, lines 38-62.

Therefore it would have been obvious to ordinary skill in the art at the time the invention was made to modify the synchronizer ring of Omiya et al with the teachings of Takahashi et al. to provide the ring member with a solid lubricant, as taught by Takahashi et al. for the noted improvement.

10. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omiya et al. in view of Kawamura et al. (5,370,725)

Omiya et al. teaches the iron sintered body substantially as claimed. The differences between the claims and the sintered body of Omiya et al. are the presence of elements listed in claim 9 and the presence of any one of bainite structure, a martensite structure and a mixture thereof.

Kawamura et al. teach the inclusion of from 0.1 to 7.0 wt.% of at least one of Cr, Mn, Mo and P in sintered alloy to improve strength, toughness and also the anti-abrasion characteristics accompanied by an increase in hardness of synchronizer ring. See col. Kawamura col. 3, lines 22-32. Kawamura et al. also teaches the presence of

bainite along with free copper and pearlite phases coexist in the matrix, see col. 5, lines 7-16. Note that this implies that presence of bainite in the matrix is the result of the inclusion of the above material.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the iron sintered body taught by Omiya et al. be modified to include at least one of the materials taught by Kawamura et al to provide a sintered body having the noted improve characteristic and a structure associated with the inclusion of the materials.

11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Omiya et al in view of Yamauchi (6,534,191).

Omiya et al disclosed synchronizer ring formed from an iron base sintered alloy substantially as claimed. The difference between the claim and Omiya et al is that Omiya et al does not teach enveloping synchronizer ring with light metal alloy member.

Yamauchi teaches harden the surface of an iron-based sintered body by providing the surface of a compact formed of an iron-based sinterable material with an aluminum or an aluminum alloy coating and sintering the coated compact. See col. 2, line 5-38.


Therefore it would have been obvious to ordinary skill in the art at the time the invention was made to modify the synchronizer ring of Omiya et al with the teachings of Yamauchi to provide the ring member with an aluminum coating, as taught by Yamauchi to provide a sintered body having high hardness and wear resistance.

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoclan T. Mai whose telephone number is (571) 272-1246. The examiner can normally be reached on 9:30-6:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Ngoclan T. Mai
Primary Examiner
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n.m.